

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated November 13, 2006. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

As outlined above, claims 1-2, 6-10 and 12 stand for consideration in this application, wherein claim 4 is being canceled and claims 3, 5, and 10 were canceled without prejudice or disclaimer, while claims 1-2 and 8-9 are being amended to correct formal errors and to more particularly point out and distinctly claim the subject invention. In addition, new claim 12 is hereby submitted for consideration.

All amendments to the application are fully supported therein. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Prior Art Rejections

35 U.S.C. §103(a) rejection

Claims 1-2, 6 and 8-10 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Doerner et al. (U.S. Pat. 6,537,684). Claim 4 was rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Doerner in view of Wang et al. (US 2002/0098389). Claim 7 was rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Doerner in view of Sakawaki et al. (US 2002/0160234). These rejections are respectfully traversed for the reasons set forth below.

According to the Manual of Patent Examining Procedure (M.P.E.P. §2143),

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both not be found in the prior art, not in the applicant's disclosure.

Furthermore, referring to *In re Fulton*, M.P.E.P. §2143. 01 (I) sets forth as follows:

The court emphasized that the proper inquiry is “whether there is something in the prior art as a whole to suggest the desirability, and thus obviousness, of course, of making the combination,” not whether there is something in the prior art as a whole to suggest that the combination is the most desirable combination available.

Furthermore, referring to *In re Mills*, M.P.E.P. §2143. 01 (III) sets forth as follows:

The mere fact that reference can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.

Claim 1

Claim 1 as amended recites that a magnetic recording medium comprises a substrate; an underlayer formed over said substrate, a magnetic recording layer formed directly on said underlayer, having a first magnetic layer, a non-magnetic intermediate layer directly formed on the first magnetic layer, and a second magnetic layer directly formed on the non-magnetic intermediate layer, and said underlayer comprises Cr, Ti and B. One of the objects, among others, of the present invention as recited in claim 1 is to improve SNR. An underlayer including B can reduce the grain size in the first magnetic layer. Consequently, signal to noise ratio (SNR) can be improved (Table 6 of the specification). The mechanism of the grain size reduction was reported in the Journal of Applied Physic, vol. 91, No. 10, pp. 8611-8613 (2002).

In contrast, Doerner shows that an underlayer comprises Cr or Cr alloy (col. 2, line 58) However, Doerner does not show or suggest either explicitly or implicitly that the underlayer comprises Cr, Ti, and B, as admitted by the Examiner.

Wang shows that an underlayer can be made of CrTiB (claim 5). However, as set forth above, the reason of including B in the underlayer is to improve SNR by reducing the grain size in a magnetic layer. However, neither Doerner nor Wang shows or suggests, either explicitly or implicitly, the above-mentioned effect of a reduction in grain size of the magnetic layer. Therefore, there is no desirability of combining Doerner with Wang to improve SNR.

Furthermore, in Wang, a recording medium having a CrTiB underlayer in combination with an intermediate layer as shown in Fig. 2 shows improvement in coercivity (Hc), compared to the recording medium having a CrTiB underlayer without an intermediate layer (paragraph [0029], Fig. 3). In other words, Wang teaches the use of a CrTiB underlayer

in combination with the intermediate layer, and teaches away the use of CrTiB underlayer alone.

Furthermore, Doerner shows that a ferromagnetic film should be formed directly on the underlayer in the recording media (col. 5, lines 9-50). In other words, Doerner teaches away from an intermediate layer being between the underlayer and the ferromagnetic film. Doerner's teaching away is inconsistent with Wang's teaching of adding an intermediate layer on the CrTiB underlayer. Therefore, there is no desirability to combine Doerner with Wang to embody all the features of the invention as recited in claim 1. As set forth above, the mere fact that Doerner and Wang can be combined does not render the resultant combination obvious because neither Doerner nor Wang suggests the desirability of the combination. Another secondary reference of Sakawaki also fails to provide any disclosure, teaching or suggestion that makes up for the deficiencies in Doerner and Wang.

In sum, there is no suggestion or motivation in either Doerner or Wang to combine these features explicitly or implicitly, or in the knowledge generally available to one of ordinary skill in the art at the time the invention was made to embody all the features of the invention as recited in claim 1.

Accordingly, claim 1 is not obvious in view of all the prior art recited.

Claims 2, 8, 9

Claims 2, 8 and 9 have the substantially same features as those of claim 1, at least with respect to a magnetic recording layer being formed directly on the underlayer and the underlayer comprising Cr, Ti and B. As such, the arguments set forth above are equally applicable here. Claim 1 being allowable, claim 2, 8 and 9 must also be allowable.

Claims 6, 10

As to dependent claims 6 and 10, the arguments set forth above with respect to independent claim 1 are equally applicable here. The corresponding base claim being allowable, claims 6 and 10 must also be allowable.

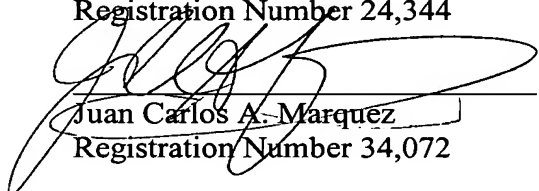
Conclusion

In view of all the above, Applicants respectfully submit that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more than sufficient that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

Stanley P. Fisher
Registration Number 24,344



Juan Carlos A. Marquez
Registration Number 34,072

REED SMITH LLP
3110 Fairview Park Drive
Suite 1400
Falls Church, Virginia 22042
(703) 641-4200

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